Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Basic guidelines for diabetes care.

Bibliographic Source(s)

Diabetes Coalition of California, California Diabetes Program. Basic guidelines for diabetes care. Sacramento (CA): Diabetes Coalition of California, California Diabetes Program; 2012 Jun. 2 p.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Diabetes Coalition of California, California Diabetes Program. Basic guidelines for diabetes care. Sacramento (CA): Diabetes Coalition of California, California Diabetes Program; 2009 Aug. 16 p.

The Basic Guidelines Packet is updated regularly and may be downloaded at http://diabetescoalitionofcalifornia.org/guidelines/ .

Recommendations

Major Recommendations

Basic Guidelines for Diabetes Care

Physical and Emotional Assessment	*Blood Pressure, Weight/Body Mass Index (BMI) – *Every visit. For adults*: Blood pressure target goal <130/80 mm Hg; Lower or higher systolic pressure may be appropriate based on patient characteristics and response to therapy; BMI target goal <25 kg/m^2. *For children*: Blood pressure target goal <90th percentile adjusted for age, height, and gender; BMI-for-age <85th percentile. Foot Exam – Every visit: Thorough visual inspection; Annually: Comprehensive foot examination – assessment of pedal pulses and 10-g monofilament pressure sensation plus one of following 128-Hz tuning fork, pinprick sensation, ankle reflexes, or vibration perception threshold. Provide general foot self-care education to all patients with diabetes. Consider refer very high risk patients to a foot care specialist. Comprehensive and Dilated Eye Exam (Note: high-quality fundus photographs with interpretation by a trained eye care provider may be incorporated into follow-up plan.) – *Type 1: Five years post diagnosis*, then *annually. Type 2: Shortly after diagnosis*, then *annually*. May be individualized to more or less often. *Note*: *Women with diabetes who become pregnant should have a retinal exam within the first trimester*. *Depression – Evaluate for depression; treat aggressively with counseling, medication, and/or referral.

	*Dental – Exam at least *twice yearly*. Assess oral symptoms that require an urgent referral.
Lab Exam	*A1C (glycosylated hemoglobin [HbA1c]) – *Quarterly*, if treatment changes or if not meeting goals; *Twice a year* if stable. Target goal <7.0%. (Less stringent A1C goals [such as <8%] may be appropriate for patients with severe hypoglycemia, limited life expectancy, advanced complications, extensive comorbid conditions, or longstanding diabetes in whom goal is difficult to attain despite treatment. More stringent A1C goals [such as <6.5%] may be appropriate for patients with short duration of diabetes, long life expectancy, and no significant cardiovascular disease [CVD], if this can be achieved without significant hypoglycemia or other adverse effects of treatment.) *For Children*: Consider age when setting glycemic goals. *Albumin-to-creatinine ratio – annually in patients with *Type 1 more than five years* and with *Type 2 beginning at diagnosis*. Normal <30. *Serum Creatinine – Annually in all adults. Use serum creatinine to estimate glomerular filtration rate (eGFR). Stage chronic kidney disease if present. *Blood Lipids – On *initial visit*, then *yearly* for adults. In adults with low-risk lipid values lipid assessments may be repeated every 2 years. Target goals (mg/dL): cholesterol, low-density lipoprotein (LDL) <100 (<70 for high CVD risk); triglycerides <150; high-density lipoprotein (HDL) >40 for men; HDL >50 for women.
Self Management Training	*Management Principles and Prevention of Complications – *Initially and ongoing*: Focus on helping the patient achieve the American Association of Diabetes Educators (AADE) 7 self-care behaviors: healthy eating, being active, monitoring, taking medications, problem solving, healthy coping, and reducing risks. Screen for problems with and barriers to self-care; assist patient to identify achievable self-care goals. *For children: As appropriate* for developmental stage. Self-Glucose Monitoring – *Non-insulin therapy or Medical Nutrition Therapy alone: As needed* to meet treatment goals. *Multiple insulin injections or pump*: Typically test *3-4 times a day*. Medical Nutrition Therapy (by trained expert) – *Initially*: Assess needs/condition, assist patient in setting nutrition goals. *Ongoing*: Assess progress toward goals, identify problem areas. Physical Activity – *Initially and ongoing*: Assess and prescribe physical activity based on patient's needs/condition (goal of at least 150 min/week of moderate intensity exercise spread over at least 3 days per week and resistance training 2 times per week if no contraindications). *Refer to Physical Activity Recommendations Fact Sheet* in the Basic Guidelines Packet for more information. Weight Management – *Initially and ongoing*: Must be individualized for patient.
Interventions	*Preconception, Pregnancy, and Postpartum Counseling and Management – *Consult* with high-risk, multidisciplinary perinatal/neonatal programs, and providers where available through the California Diabetes and Pregnancy Program (CDAPP) Sweet Success (http://cdappsweetsuccess.com). *For adolescents: Age appropriate counseling advisable, beginning with puberty*. Aspirin Therapy (for adults) – 75-162 mg/day as a primary prevention strategy for those at increased cardiovascular risk (10 year risk >10%). This includes most men >50, women >60 with one additional risk factor (family history of CVD, hypertension, smoker, dyslipidemia, albuminuria). Smoking Cessation – Ask every patient if they use tobacco, Advise them to quit, Refer them to the California Smokers' Helpline at 1-800-NO-BUTTS (1-800-662-8887). *Immunizations – Influenza, pneumococcal, and hepatitis B *per Centers for Disease Control and Prevention (CDC) recommendations*.

*See Explanatory Notes in the original guideline document.

1. It is assumed that the following are routinely occurring in the medical setting:
    - A history and physical appropriate for a person with diabetes are performed. Visits are sufficiently frequent to meet the patient's needs and treatment goals.
    - Abnormal physical or laboratory findings result in appropriate and individualized interventions.
    - Expert multi-disciplinary health professionals provide self-management training. For children/adolescents and their families, training from a diabetes team or team member with experience in child and adolescent diabetes is strongly recommended to begin at diagnosis.
    - Physicians should consult current references for normal values and for appropriate treatment goal values, both for children and adults.
    - Specialists should be consulted when patients are unable to achieve treatment goals in a reasonable time frame, when complications

arise, or whenever the primary care physician deems it appropriate. Under similar circumstances, children/adolescents should be referred to specialists who have expertise in managing children and adolescents with diabetes.

2. Additional comments on specific items included in these Guidelines:
    - Blood Pressure/BMI – For children, to determine blood pressure percentile adjusted for age, height, and gender see the Centers for Disease Control and Prevention (CDC) Web site. To calculate and determine BMI percentile use see the CDC Web site.
    - Dental – Refer all patients with diabetes for a dental examination, as a component of the comprehensive diabetes evaluation, regardless of oral findings or complaints.
    - A1C/Self-Glucose Monitoring – Certification by the National Glycohemoglobin Standardization Program as traceable to the Diabetes Control and Complications Trial (DCCT) reference ensures portability of A1C results. Verify that the laboratory is certified in this method. A1C target goals should be achieved gradually over time. Target goals should be less stringent for children, the elderly, and other fragile patients. Clinicians have found that making the patient aware of his/her A1C values and their significance helps motivate the patient toward improved glycemic control. This principle also applies to self-glucose monitoring. Target goals should be individualized for each patient.
    - Microalbuminuria – See Screening and Initial Management of Diabetic Microalbuminuria and Nephropathy algorithm.
    - Glomerular Filtration Rate (GFR) – See Screening and Initial Management of Diabetic Microalbuminuria and Nephropathy algorithm and explanatory notes for purpose and calculation of GFR.
    - Blood Lipids – Abnormal blood lipids are often under-treated. An active, progressive treatment and monitoring plan should be instituted. High risk cardiovascular disease (CVD) patients are defined as patients with overt CVD (i.e., patients with acute coronary syndromes or previous cardiovascular events) or without overt CVD but men >50 and women >60 years of age and have 1 or more CVD risk factor.
    - Immunizations – See CDC schedules at http://www.cdc.gov/vaccines/schedules/index.html
    - Children/Adolescents – For specific diabetes care recommendations, see references in the Basic Guidelines Packet.
    - Psychosocial Assessment – Assess barriers to self-care: common environmental obstacles, cultural issues, beliefs and feelings about diabetes, disorders of eating and mood, life stresses, and substance use. Consider using Patient Health Questionnaire – 9 (PHQ9) as a depression monitoring tool (http://www.phqscreeners.com) or the Edinburgh Postnatal Depression Scale for use during pregnancy (http://www.cdph.ca.gov/programs/cdapp/Pages/default.aspx)
3. A list of general and specific references is included in the Basic Guidelines for Diabetes Care Packet.

Clinical Algorithm(s)

The original guideline document contains clinical algorithms for:

- Therapy for Glycemic Control of Type 2 Diabetes Mellitus in Adults*
- Pre-diabetes Identification and Intervention*
- Screening and Initial Management of Diabetic Microalbuminuria and Nephropathy*
- Foot Care for People with Diabetes
- Oral Health Care for People with Diabetes
- Lipid Management in People with Diabetes

*These algorithms are adapted from the American Diabetes Association (ADA) Clinical Practice Recommendations, 2011.

Scope

Disease/Condition(s)

- Type 2 diabetes
- Type 1 diabetes

Guideline Category

Counseling

Evaluation

Management

Prevention

Risk Assessment

Screening

Clinical Specialty

Endocrinology

Family Practice

Internal Medicine

Obstetrics and Gynecology

Pediatrics

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Nurses

Patients

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

- To serve as a framework for developing diabetes care programs aimed at reducing the personal and societal impact of diabetes
- To update the 2009 version of these basic guidelines

Target Population

Adults, children, and adolescents with type 1 and type 2 diabetes mellitus

Interventions and Practices Considered

1. Physical and emotional assessment
    - Blood pressure, weight/body mass index (BMI) (for adults and children)
    - Foot exam
    - Comprehensive and dilated eye exam
    - Screening for depression
    - Dental exam
2. Laboratory examination

    - Glycosylated hemoglobin (HbA1c) measurement (for adults and children)
    - Albumin-to-creatinine ratio assessment
    - Serum creatinine to estimate glomerular filtration rate (eGFR)
    - Blood lipids measurement
3. Self-management training
    - Management principles and prevent complications
    - Self-glucose monitoring
    - Medical nutrition therapy (by trained expert)
    - Physical activity
    - Weight management
4. Interventions
    - Preconception, pregnancy, and postpartum counseling and management
    - Aspirin therapy
    - Smoking cessation
    - Immunizations (influenza, pneumococcal, hepatitis B)

Major Outcomes Considered

- Life expectancy
- Advanced complications
- Extensive comorbid conditions

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Pertinent articles for review were identified from the current American Diabetes Association (ADA) Clinical Practice Recommendations, Medline searches and the reference list from the previous year's Basic Guidelines for Diabetes Care. The time frame of the literature search was 2009 to 2012. Some references of "gold standard" trials are older. The specific search terms differed based on which subsection of the guidelines was being reviewed.

The article list for each guideline was then reviewed for completeness. Articles from older or lower-rated studies were removed from the list if a more current, higher quality study on the list contributed the same or new information.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Experts in diabetes care reviewed and rated the body of evidence using a system adopted from the American Diabetes Association (ADA) grading system for clinical practice recommendations. The system rates practice recommendations based on the level of evidence for the recommendation and the likelihood of clinical benefit. A is the highest rating and "expert consensus" is the lowest.

American Diabetes Association Evidence Grading System for Clinical Practice Recommendations

Level of Evidence	Description
A	Clear evidence from well-conducted, generalizable, randomized controlled trials that are adequately powered, including: • Evidence from a well-conducted multi-center trial • Evidence from a meta-analysis that incorporated quality ratings in the analysis • Compelling non-experimental evidence (i.e., "all or none" rule developed by the Center for Evidence Based Medicine at Oxford)* and/or Supportive evidence from well-conducted randomized controlled trials that are adequately powered including: • Evidence from a well-conducted trial at one or more institutions • Evidence from a meta-analysis that incorporated quality ratings in the analysis *Either all patients died before therapy and at least some survived with therapy or some patients died without therapy and none died with therapy. Example: use of insulin in the treatment of diabetic ketoacidosis.
B	Supportive evidence from well-conducted prospective cohort studies, including: • Evidence from a well-conducted prospective study or registry • Evidence from a well-conducted meta-analysis of cohort studies and/or Supportive evidence from a well-conducted case control study
C	Supportive evidence from poorly controlled or uncontrolled studies • Evidence from randomized clinical trials with one or more major or three or more minor methodological flaws that could invalidate the results • Evidence from observational studies with high potential for bias (such as case series with comparison with historical controls) • Evidence for case series or case report • Conflicting evidence with the weight of evidence supporting the recommendation
D	Expert consensus or clinical experience

Diabetes Care, Vol 32, (Supplement 1):S-13, January 2009

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

Experts in the respective fields reviewed and analyzed the evidence.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Experts in the respective fields formulated recommendations that were then discussed with the Guidelines Committee. Expert consensus was reached prior to inclusion.

For the 2012 update, committee members assigned to Guideline Packet Products reviewed the product for accuracy, ease of use, clarity, and consistency with the Basic Guidelines for Diabetes Care. As needed, they proposed to the committee revisions based on new evidence in the literature and/or changes to the Basic Guidelines by the May meeting.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Not stated

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

One or more of the following criteria were used for inclusion of an item in these guidelines:

- Published evidence demonstrated either the efficacy or the effectiveness of the item.
- Published studies on cost-identification, cost-effectiveness, or cost-benefit analysis of the item demonstrated favorable economic results.
- A preponderance of expert opinion held that the item is considered to be essential to the care of persons with diabetes.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management and education of patients with type 2 diabetes

Potential Harms

Adverse effects of diabetes treatment

Qualifying Statements

Qualifying Statements

These Guidelines are intended for use by primary care professionals to diagnose, manage and educate patients with type 2 diabetes. While providing recommendations the Guidelines are not intended as a substitute for the advice of a physician or other health care professional. These Guidelines are updated every two years or as significant changes or recommendations are identified.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Chart Documentation/Checklists/Forms

Clinical Algorithm

Foreign Language Translations

Patient Resources

Slide Presentation

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

1999 Jan (revised 2012 Jun)

Guideline Developer(s)

California Diabetes Program - Nonprofit Organization

Diabetes Coalition of California - Nonprofit Organization

Source(s) of Funding

California Diabetes Program and Diabetes Coalition of California

Guideline Committee

Diabetes Coalition of California Guidelines Committee

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

None

Guideline Endorser(s)

American Diabetes Association - Professional Association

Blue Cross of California State Sponsored Program - Managed Care Organization

California Cooperative Healthcare Reporting Initiative - Professional Association

Conference of Local Health Offices (California) - Independent Expert Panel

Health Resource Services Administration Health Disparities Collaborative - Federal Government Agency [U.S.]

Hill Physicians Group - Professional Association

Lumetra - Professional Association

Medical Board of California - State/Local Government Agency [U.S.]

Pacific Business Group on Health - For Profit Organization

Guideline Status

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This guideline updates a previous version: Diabetes Coalition of California, California Diabetes Program. Basic guidelines for diabetes care. Sacramento (CA): Diabetes Coalition of California, California Diabetes Program; 2009 Aug. 16 p.

The Basic Guidelines Packet is updated regularly and may be downloaded at http://diabetescoalitionofcalifornia.org/guidelines/ .

Guideline Availability

Electronic copies: Available from the Diabetes Coalition of California Web site .

Availability of Companion Documents

The following is available:

- Professional basic guidelines presentation: a PowerPoint presentation developed for the medical professional to inform health care providers and organizations about the Basic Guidelines for Diabetes Care. Electronic copies: Available from the Diabetes Coalition of California Web site .

Checklists and forms for a foot exam, a diabetes eye consultation and report, and a diabetes flow sheet are included in the Basic Guidelines Packet .

Patient Resources

The following are available:

- Diabetes health record card: a self-management tool for patients, available in 19 languages. Electronic copies: Available in multiple language translations from the Diabetes Coalition of California Web site .
- Patient/consumer fact sheets: a series of simple fact sheets developed to help patients on a number of diabetes topics. Electronic copies: Available from the Diabetes Coalition of California Web site .
- Take charge! presentation: a PowerPoint presentation developed for non-professionals to educate people with diabetes about the Basic Guidelines for Diabetes Care and how to use the Diabetes Health Record. Electronic copies: Available from the Diabetes Coalition of California Web site .
- What you need to know to prevent diabetes: a PowerPoint presentation to introduce people to pre-diabetes and its prevention. Electronic copies: Available from the Diabetes Coalition of California Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This summary was completed by ECRI on January 10, 2000. The information was verified by the guideline developer as of January 31, 2000. This summary was updated July 9, 2001. This summary was updated again on October 23, 2002, and verified by the guideline developer on December 5, 2002. This summary was updated again on May 4, 2004. The updated information was verified by the guideline developer on July 20, 2004. This summary was updated on December 9, 2005. The updated information was verified by the guideline developer on January 10, 2006. This

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